# Performance Evaluation of an Autonomous Hazardous Waste Inspection Vehicle

Eric Byler
Lockheed Martin Astronautics
P.O. Box 179
Denver, CO 80201
(303) 971-5875; fax (303) 977-4739
eric.a.byler@den.mmc.com

## I. ABSTRACT

An Intelligent Mobile Sensing System (IMSS) has been developed for the automated inspection of radioactive and hazardous waste storage containers in warehouse facilities at Department of Energy (DOE) sites. Hundreds of thousands of hazardous, radioactive, and mixed waste drums are being stored at DOE sites throughout the country and the anticipated decommissioning of facilities will generate many more drums of waste. Federal regulations require that stored drums be inspected periodically for degradation and to verify inventories. Currently, these waste storage facilities are being inspected manually. The IMSS will reduce the risk of exposure to personnel and create accurate, high-quality inspection reports to ensure regulatory compliance.

The following portions of this paper discuss the performance of the prototype system during field trials at the Fernald site. The paper begins with a discussion of the system design starting with a system overview and progressing through a discussion of the mobility base, mission sensors, and operator interface. The paper concludes with a presentation of measured system performance during the four weeks of onsite testing.

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